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# NASA TECH BRIEF



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## Nonelectrolytic Tantalum Capacitors Developed

The development of a large area, nonelectrolytic tantalum foil capacitor has recently been accomplished. The capacitor consists of a number of tantalum foils with 3- by 1- by 0.005-inch dimensions, connected in parallel and wound into a cylinder 0.25 inch in diameter by 1 inch long. This capacitor has a capacitance of approximately 1 microfarad and is capable of operating at 125°C at 150 volts with an insulation resistance of at least 1 megohm. The devices constructed demonstrate that fairly stable nonpolar, nonelectrolytic tantalum capacitors can be built from foil to operate at elevated temperatures and voltages.

As in electrolytic capacitors, the dielectric of this capacitor consists of an anodized tantalum oxide film, but with one exception: instead of the tantalum metal and an electrolyte acting as electrodes, aluminum films evaporated directly on the two oxide surfaces act as the electrodes. The tantalum foil is merely the carrier for the two oxide films and connects the two

in series. This capacitor, unlike the electrolytic variety is symmetrical and, therefore, nonpolar.

### Notes:

1. In tests at a potential of 100 volts, capacitors of this design have remained stable through a temperature range from 25° to 125°C for periods up to 100 hours.
2. Inquiries concerning this investigation may be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Huntsville, Alabama 35812  
Reference: B66-10552

### Patent status:

No patent action is contemplated by NASA.

Source: Cornell-Dubilier Electric Corporation  
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Category 01